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Peziza paludicola, the correct binomial for *P. udicola* nom. inval.

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Abstract — "*Peziza udicola*", *P. crassipes* Quél., and *P. paludicola* are shown to be conspecific, with *P. paludicola* as the correct name for the species. *Peziza crassipes* var. *kilimanjarensis* is recombined as a variety of *P. paludicola.*

Key words — *Ascomycota*, *Pezizales*, nomenclatural analysis, taxonomy

Introduction

During preparation of a monograph on *Peziza* Fr. —to be published by the Bresadola Mycological Association (AMB, Trento, Italy)— the name *Peziza udicola* Svrček aroused our attention. This name appears only in some identification keys (Hohmeyer et al. 1989, Spooner 2001), generally as a short observation without reference to year and place of publication and sometimes also without author. No information about its date and place of publication was available from the Index of Fungi, IndexFungorum (www.indexfungorum.org), or MycoBank (www.mycobank.org).

A loan request for the holotype from the mycological collections of the National Museum of Prague (PRM), where Svrček's specimens are located, was met with the response that there were no specimens or data relating to this name.

It was moreover necessary to verify the possible conspecificity of "*P. udicola*" with *Aleuria paludicola* Boud. (assumed by Schmid-Heckel 1990) and also with *Peziza crassipes* Quél. (reported by Svrček 1970).

Svrček (1970) provided a detailed description of *P. crassipes* Quél. (free translation from German):

> ...Hymenial surface 250–300 µm tall, tending to brown. Hypothecium narrow, not distinctly delimited from the medulla. Asci 250–300 × 14–22 µm, 8-spored, with apical ring strongly amyloid... Spores (19–)22–24(–25) × (10–)10.5–12.5(–13.5) µm, mostly 21–23 × 11–12 µm, long elliptical to cylindrical-elliptical, round to sharpened at both extremities, homogeneous content, often pale yellow-brown, totally smooth...on decaying twigs, herbaceous stems, completely rotten wood, debris, sometimes on necrotic herbs or directly on bare ground, in humid to swampy places, river banks and near springs, particularly under large herbaceous plants (e.g. *Petasites, Chamaenerion angustifolium*)....

Svrček (1970) also reported:

> …I cannot exclude the possibility that *Aleuria paludicola* Boudier (1907) and *Peziza crassipes* are conspecific. Boudier's original diagnosis states that this *Aleuria* has saucer-shaped apothecia, spores 23–26 × 12–15 µm and exceptionally wide paraphyses (18–22 µm). Up to now it has been collected by the author only once, on marsh stems in a swamp. Maybe it is an abnormal form of *Peziza crassipes*... Moser (1963) mistakes the two species and unintentionally uses the epithet "*palustris*" for Boudier's "*paludicola*."

In 1970, therefore, Svrček did not make any mention of the earlier homonym, *Peziza crassipes* Wallr. (Wallroth 1833), an inoperculate ascomycete. This earlier homonym makes *P. crassipes* Quél. a nom. illegit. Eleven years later in a checklist of Czech discomycetes, Svrček (1981) listed his 1970 records of *P. crassipes* Quél. under a newly coined name "*P. udicola,*" noting that there was an earlier homonym of Quélet's binomial and referring to the description and illustration in his previous publication: "Svr. 1970: 63 (c. fig.) (*Peziza crassipes* Quél., non Wallroth)". The name "*P. udicola*" was apparently intended as a potential nom. nov. for the illegitimate Quélet binomial, but Svrček failed to meet the requirements for valid publication when he made no full and direct reference to the place of publication of the replaced synonym. As a potential sp. nov., it was also not validly published because of the absence of any Latin description or reference to a previously published Latin description (McNeill et al. 2006: Art. 36.1); it may even be argued that it is a nom. nud. (McNeill et al. 2006: Art. 32.1(d)) despite the direct reference to the previous German description (Svrček 1970) and the indirect reference to the original French description (Quélet 1883).

Specimen loans of the holotype, isotype, or other relevant collections of *P. crassipes* and *Aleuria paludicola* were requested from the fungal collections of the National Museum of Natural History, Paris (PC) but none were found. We have therefore only been able to compare published information.

Table 1 summarizes what each cited author wrote about the three names. Brummelen (1969) noted that microscopic dimensions given by Boudier (1907, 1904–10) contain an error and need to be decreased by 10%. This was taken into account when analysing the spore sizes of *A. paludicola* reported by

Table 1. Comparison of collections of *Peziza crassipes* Quél., and *P. paludicola*.

Taxon Country of origin (Reference)	Apothecium	Hymenium (color)	Receptacle surface	Ascospore size
P. crassipes France (Quélet 1883)	Calyx-shaped, ± slightly cup-shaped, umbilicate, ± stalked, with large base, widely adherent to the substratum	Ochraceous to pale ochraceous-brown, brown-clayey, dirty ochraceous, dark brown	Slightly paler than hymenium, finely brown furfuraceous	(19–)21–23(–26) × 10–13 µm
P. paludicola France (Boudier 1907)	Plane, not cup-shaped, almost pulvinate, shortly stalked, fleshy, thick	Reddish ochraceous-yellow, ochraceous to brown, tawny-brown	Paler than hymenium, finely furfuraceous. Margin not indented	*20.7–23.4 × 10.8–13.5 µm *(acc. to Brummelen 1969)
P. crassipes Czechoslovakia (Svrček 1970)	Slightly cup-shaped / flattened, saucer-shaped to turbinate-cyathiform, sl. depressed, largely adherent, subsessile,	Hazelnut, ochraceous-brown, brown-clayey, yellow-brown	Paler than hymenium, brown-furfuraceous, margin dentate from granulation. Pseudostalk whitish	(19–)21–23(–25) × 11–12(–13) µm
P. paludicola Italy (this paper)	Slightly cup-shaped, depressed, ± umbilicate, sessile to sub stalked, occ. flattened on the bottom	Brownish-ochraceous	Concolorous or slightly paler than hymenium, granulation denser toward margin; edge entire, but appears dentate from granulation	19–22(–24.5) × 12–13 µm

Table 1 continued on next page

Table 1, concluded

Taxon Country of origin (Reference)	Ascus size	Paraphyses	Excipulum structure ME = medullary excipulum EE = Ectal excipulum	Habitat
P. crassipes France (Quélet 1883)	250–300 × 14–18 µm	7–11 µm wide, usually irregular, often enlarged & curved, sometimes with pigment granules	ME: text. globulosa-angularis; EE: similar to ME, but with smaller cells	Wood (also buried), woody humus, sawdust
P. paludicola France (Boudier 1907)	*270–360 × 18–22.5 µm *(acc. to Brummelen 1969)	(16–20 µm wide acc. to Brummelen), apex long club-shaped, thick, weakly coloured	Not reported	On marsh *Carex* leaves or other vegetal residuals in swampy areas
P. crassipes Czechoslovakia (Svrček 1970)	250–300 × 14–22 µm	7–11 µm, clavate, irregularly wrinkled	Subhymenium: not distinguishable. ME: text. globulosa-angularis, cells 60–90 µm. EE: similar to ME, cells smaller, 18–40(–60) µm.	Marsh wood (also buried), sawdust, twigs, herbaceous stems, swampy ground or very humid places with large herbaceous plants
P. paludicola Italy (this paper)	250-280 × 15–18 µm	Cylindrical medially, 1–2 basal cells swelling to 4–5 µm, apex irregular and ≤ 10 µm, simple or forked in the lower part	Subhymenium: text. globulosa or gl.-angularis, cells 10–30 µm. ME: similar text., cells ≤100 µm mixed with intricate hyphae. EE: text. similar to ME, cells 10–15 µm.	Degraded deciduous wood; loam rich in woody herbaceous residuals

Boudier. The corrected dimensions of the spores in question here are 20.7–23.4 × 10.8–13.5 µm. Comparing these data with those obtained from our analyses on "*P. udicola*" makes clear that the various characteristics are very similar and that small differences may be considered physiological variations of different individuals. We believe they are not enough to justify treating the names as separate species.

Materials & methods

Macro- and microscopic examinations were carried out on both fresh and dried specimens (rehydrated in water or KOH 5%), with water as a mounting medium and Melzer's reagent to observe the iodine reaction of the asci, using an Optika optical microscope (BK 1301 model), with 40× or 100× (immersion oil) objectives. Spore dimensions were obtained by measuring of 50 mature spores. Collections were placed in the fungal reference collection of L'Aquila (HMA), the Royal Botanic Gardens, Kew K(M), and the private herbaria collections of F. Padovan (FP) and G. Medardi (GM).

Taxonomy

Peziza paludicola (Boud.) Sacc. & Traverso, Syll. Fung. 20: 315, 1911. FIG. 1

≡ *Aleuria paludicola* Boud., Hist. Classific. Discomyc. Europe: 46, 1907

= *Peziza crassipes* Quél., C.R. Ass. Franç. Av. Sci. (La Rochelle 1882) 11: 405, 1883, nom. illegit., non Wallr. 1833.

"*Peziza udicola*" Svrček, Česká Mykologie 35(2): 72, 1981 nom. inval., ICBN [Vienna] Art. 36.1.

TYPIFICATION: **Lectotype designated here**, FRANCE, "sur les feuilles pourries des *Carex*, Juillet, dans les marais. Montmorency", *Aleuria paludicola* coloured plate, Boudier, Icon. Mycol., Série 5(24): no. 469 [Tom. 2: pl. 269], 1909. **Epitype designated here**, ITALY, Trentino-Alto Adige, Belluno, shore of the river Piave, 10/05/86, leg. e det. F. Padovan [K(M) 169757].

APOTHECIA up to 20 mm diam., slightly cup-shaped, sessile to sub-stalked. Hymenial surface smooth, slightly depressed to more or less umbilicate, sometimes flattened, brownish-ochraceous. RECEPTACLE SURFACE concolorous or slightly paler than the hymenium and with brown granules, more dense toward the margin; margin regular, appearing dentate because of the granulation, but actually entire. FLESH fragile and waxy, greyish-ochraceous. ASCOSPORES 19–22(–24.5) × 12–13 µm, elliptical, smooth, hyaline, without oil drops, uniseriate in the ascus. ASCI 250–280(–300) × 15–18 µm, sub-cylindrical. PARAPHYSES sub-cylindrical and 4–5 µm wide at the base (often with 1–2 basal enlarged cells), dilated and irregularly shaped in the upper part, up to 10 µm, simple or forked at the base, septate. HYMENIUM up to 300 µm thick. SUBHYMENIUM 40–50 µm thick; textura globulosa-angularis, composed of rounded or slightly angular cells, 10–30 µm diam. MEDULLARY EXCIPULUM

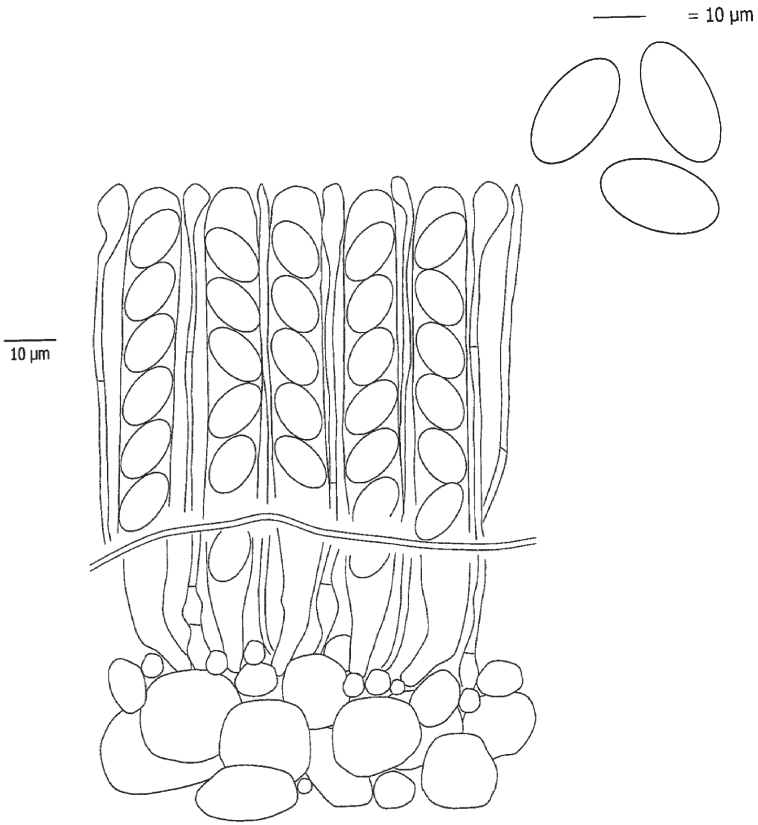

Fig. 1. *Peziza paludicola* (Epitype, K(M) 169757). A. Uppermost zone of the hymenium (tips of paraphyses and asci with ascospores). B. Released ascospores.

about 500 µm thick; textura globulosa, composed of rounded cells up to 100 µm diam., mixed with obvious intricate hyphae, 15–20 µm wide. Ectal excipulum 20–30 µm thick; textura angularis, composed of angular or sub-angular cells, about 10–15 µm diam.

Habitat: in small groups on degraded wood of deciduous trees.

Additional material examined: **ITALY**, **Abruzzo**, L'Aquila, Castellafiume, 09/11/84, leg. e det. not declared, sub *P. ampliata*, (HMA 4129); **Lombardy**, Brescia, Breno, tableland of Gaver, 21/08/04, leg. e det. G. Medardi, (in herb. priv. GM); Ponte di Legno, P. so Gavia, on loam and humid woody herbaceous remnants, at 2800 m of altitude, 06/08/06, leg. e det. G. Medardi, (in herb. priv. GM).

Table 2. Comparison of *Peziza paludicola* with similar species.

Taxon Country of origin (Reference)	Hymenium color	Ascospore size	Excipulum structure ME = medullary excipulum EE = Ectal excipulum	Habitat
Peziza ampliata Italy (this paper)	Whitish-brown or pale brown	20–22 × 12–14 µm	Subhymenium: text. globulosa-angularis. ME: 1 layer of text. globulosa with very large cells (140–220(–240) × 60–80 µm) EE: text. globulosa-angularis, cells 15–35(–45) µm diam.	Herbaceous and woody remnants
Peziza boudieri Italy (this paper)	Brown-yellow-olivaceous with orange reflexes	(18–)20–21 × 7–9 µm	Subhymenium: text. globulosa-angularis. ME:: 1 layer of text. intricata. EE: text. globulosa	Ground
Peziza hortensis Italy (this paper)	Tawny-brown with yellowish reflexes	18–20(–22) × 10–11 µm	Subhymenium: text. globulosa-angularis. ME: 3 layers (1° text. globulosa, 2° text. intricata, 3° text. globulosa-angularis). EE: text. intricata	Ground and cultivation loam
Peziza paludicola Italy (this paper)	Brownish-ochraceous	19–22(–24.5) × 12–13 µm	Subhymenium: text. globulosa-angularis, cells 10–30 µm diam. ME: 1 layer of text. globulosa, cells up to 100 µm diam. EE: text. angularis, cells 10–15 µm diam.	Deciduous wood
Peziza sciophila Italy (Medardi 2007)	Hazelnut-grey-ochraceous with weak olivaceous or violaceous-purple tinges	18–21 × 10–12 µm	Subhymenium: not distinguishable. ME: 2 layer (1° text. intricata, 2° text. intricata & irregularly globose cells. EE: text. globulosa	*Picea* wood litter / residuals; more rarely on *Alnus* remnants

Peziza paludicola var. ***kilimanjarensis*** (J. Moravec) Cacialli, Lantieri & Medardi, **comb. nov.**

MycoBank MB 561192

≡ *Peziza crassipes* var. *kilimanjarensis* J. Moravec, Česká Mykologie 32(2): 77. 1978.

The Moravec (1978) variety required transfer from the illegitimate species, *P. crassipes* Quél., to its legitimate synonym *P. paludicola*.

Discussion

Peziza paludicola can be distinguished from similar species by the following characteristics: apothecia with monotonous colours; the outside showing a dark granulation more evident at the margin; smooth and relatively large spores; habitat generally related to decaying deciduous wood. Similar species are *Peziza boudieri* (Cooke) Donadini, *Peziza hortensis* P. Crouan & H. Crouan, and *Peziza sciophila* Medardi. These can be differentiated by the anatomy of the excipular tissues and by the habitat. *Peziza ampliata* Pers. is distinctive in both the excipular architecture and the position of the layers and the dimensions of the cells; the substratum is also at times important to separate these fungi. Table 2 summarizes the main characteristics of these species.

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